

The opinion in support of the decision being entered today was not written for publication and is not binding precedent of the Board

Paper No. 26

MAILED

AUG 21 2002

UNITED STATES PATENT AND TRADEMARK OFFICE

**PAT. & T.M. OFFICE
BOARD OF PATENT APPEALS
AND INTERFERENCES**

BEFORE THE BOARD OF PATENT APPEALS
AND INTERFERENCES

Ex parte BERND BRUCKMANN, STEFAN WOLFF,
WOLFGANG HEIDER, JOACHIM JAEHME,
WERNER LANGER AND HANS RENZ

Appeal No. 2000-1881
Application 08/894,156

HEARD: MARCH 20, 2002

Before KIMLIN, JEFFREY T. SMITH, and MOORE, Administrative Patent Judges.

MOORE, Administrative Patent Judge.

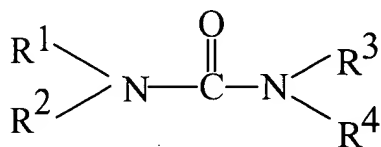
DECISION ON APPEAL

This is an appeal under 35 U.S.C. § 134 from a final rejection of claims 1 through 9, all the claims pending in this application.

REPRESENTATIVE CLAIM

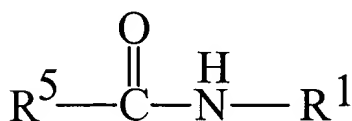
Claim 1, which is illustrative of the subject matter on appeal, reads as follows:

1. A process for the preparation of a polyisocyanate which contains one or more biuret groups by reacting
 - a) an aliphatic or cycloaliphatic isocyanate containing two or more isocyanate groups (isocyanate a) with
 - b) a tertiary alcohol or a mixture of water and a tertiary alcohol (biuretizing agent b) at from 100 to 250°C, which comprises carrying out the reaction in the presence
 - c) of a stabilizer (c) consisting essentially of a catalytic amount of urea, ammonia, biuret, a urea derivative of formula I



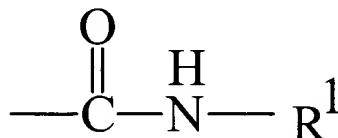
(I)

in which R¹, R², R³, and R⁴ are hydrogen, C₁ to C₁₀ alkyl or C₆ to C₁₀ aryl, or a carboxamide of the formula II



(II)

in which R⁵ is C₁ to C₁₂ alkyl which is unsubstituted or in which 1, 2, or 3 hydrogen atoms are replaced by a radical



THE REFERENCES

In rejecting the appealed claims under 35 U.S.C §103, the Examiner relies on the following references:

| | | |
|-----------------------------|-----------|---------------|
| Wagner et al. (Wagner I) | 3,903,127 | Sep. 2, 1975 |
| Wagner et al. (Wagner II) | 3,976,622 | Aug. 24, 1976 |
| Hennig et al. (Hennig) | 3,367,956 | Feb. 6, 1968 |
| Mohring et al. (Mohring I) | 4,152,350 | May 1, 1979 |
| Mohring et al. (Mohring II) | 4,192,936 | Mar. 11, 1980 |

THE REJECTIONS

Claims 1-9 stand rejected under 35 U.S.C. §103(a) as being unpatentable over Mohring I or Mohring II in view of Wagner I or Wagner II and Hennig.

SUMMARY OF DECISION

On consideration of the record before us on appeal, we affirm.

DISCUSSION

The Invention

The invention relates to a process for the preparation of a polyisocyanate which contains one or more biuret groups by reacting a) an aliphatic or cycloaliphatic isocyanate containing two or more isocyanate groups (isocyanate a) with b) a tertiary alcohol or a mixture of water and a tertiary alcohol (biuretizing agent b) at from 100 to 250°C. The reaction is carried out in the presence of a stabilizer consisting essentially of a catalytic amount of urea, ammonia, biuret, a urea derivative of a specified formula I, or a carboxamide of a specified formula II (Appeal Brief, page 2, line 16 - page 3, line 11).

The Rejection of Claims 1-9 Under 35 U.S.C. §103(a)

Claims 1-9 stand rejected under 35 U.S.C. §103(a) as being unpatentable over Mohring I or Mohring II in view of Wagner I or Wagner II and Hennig.

The Examiner has found that Mohring I and II disclose the production of biuret containing polyisocyanates having a low unreacted polyisocyanate monomer content and light color. Diisocyanates are reacted with an alcohol component, including tertiary alcohols, an amine component, and water (Examiner's Answer, page 4, lines 5-8). The Examiner has additionally found that the claimed stabilizers were known to be useful agents for the production of biurets from Wagner I, Wagner II, and Hennig (Examiner's Answer, page 4, lines 10-13).

The Examiner has therefore concluded that it would have been obvious to one of ordinary skill in the art to substitute the nitrogen-containing biuretizing agents of the secondary references for the amine component of Mohring I or II as one would have reasonably expected the nitrogen-containing compounds of the primary and secondary references to function as equivalents (Examiner's Answer, page 4, line 17 - page 5, line 8).

The Appellants, on the other hand, state that their claims define over the references due to the presence of the "stabilizer" (c) which is a "catalytic" amount of the compound. This, it is urged, results in biuret-containing polyisocyanates which are pale in color and have a low amount of volatile isocyanates, particularly after prolonged storage (Appeal Brief, page 5, lines 13 - 21).

The Appellants challenge the Examiner's determination of equivalency of the nitrogen-containing biuretizing agents and assert that there is no disclosure or

suggestion in the cited prior art that the urea-containing biuretizing agents of Wagner I or II or Hennig would be expected to be equivalent to the amine compound of Mohring (Appeal Brief, page 6, lines 20-24). According to the Appellants, in the claimed process a urethane is formed in the first step, the urethane is then decomposed into an amine, CO₂, and an olefin in a second step, the amine forms urea with additional isocyanate in a third step, and the urea forms biuret with additional isocyanate in a final step. Thus, it is argued, the component (c) is present only in a catalytic amount, and does not function as a biuretizing agent (Appeal Brief, page 7, lines 10-19).

We begin our analysis with the claimed subject matter. Claim 1 recites a process for preparing a polyisocyanate by reacting an isocyanate with biuretizing agent water (or a mixture of water and a tertiary alcohol) in the presence of "a stabilizer (c) consisting essentially of a catalytic amount of urea, ammonia, biuret, a urea derivative of formula I ...[not shown] or a carboxamide of the formula II [not shown]." Although the term "catalytic amount" is not defined in the specification, a range of 0.01 to 2.0 mol%, based upon the the isocyanate groups in (a) is stated as preferable (Specification, page 5, lines 31-34).

As an initial matter, we note that the claim is not closed to additional components in the reaction mixture. While the Appellants have used the term "consisting essentially of a catalytic amount" to define component (c), nothing in the overall claim restricts additional components or amounts from being included in the reaction mixture of the claimed process.

We turn to the primary references, Mohring I and Mohring II. We agree with the Examiner that the Mohring references teach the preparation of biuret-containing

polyisocyanates by reacting organic polyisocyanates with a tertiary aliphatic alcohol and water, in the presence of an amine (Mohring I, column 3, line 16 - line 24; Mohring II, column 3, line 19 - line 27). It is taught in both references that water is not the exclusive biuretizing agent, and therefore the proportion of isocyanate groups which must be destroyed by amine formation and the quantity of gaseous by-products is less than those which use water alone. (Mohring I, column 3, lines 30-36; Mohring II, column 3, lines 31-40).

We further find that Wagner I and Wagner II teach a process for the production of biuret polyisocyanates by reacting organic diisocyanates with biuretizing agents in the optional presence of catalysts and other additives (Wagner I and Wagner II, column 2, lines 27 - 31). N, N'-dimethyl urea is specifically exemplified at column 6, line 11 of both references, following a listing of various amines.

Finally, we find that Hennig teaches the preparation of biuret polyisocyanates using diisocyanates and substituted ureas (Column 2, lines 39-42).

Given the teaching of equivalence in Wagner 1, column 5, line 54 - column 6, line 27, we agree with the Examiner's conclusion that it would have been prima facie obvious to combine known biuretizing agents to yield a biuretizing composition suitable for forming a biuret. The Appellants argue that it is not clear why one of ordinary skill in the art would replace the biuretizing agent of Mohring, let alone only the amine therein, with another biuretizing agent (Appeal Brief, page 7, lines 1-4). However, as stated in In re Fout, 675 F.2d 297, 301, 213 USPQ 532, 536 (CCPA 1982) "Express suggestion to substitute one equivalent for another need not be present to render such substitution obvious."

The Appellants raise several issues regarding this substitution in challenge of the prima facie case. First, they assert that the recited stabilizer of the claims is not an "amine containing" stabilizer. (Appeal Brief, page 6, lines 20-21). The Examiner has stated that both urea and amines are known biuretizing agents, not that they are both amines, and that it would have been obvious to substitute one of the other. The Appellants instead argue that urea is not an amine, but that argument misses the point - equivalent does not mean identical.

The Appellants also assert that there is no disclosure or suggestion in any of the cited art that the urea compounds are, or would be expected to be, equivalent to the mono- or polyamine compounds of Mohring (Appeal Brief, page 6, lines 21-24). This is incorrect. Mohring exemplifies methylamine at column 5, line 4, while Wagner I notes the interchangeability of biuretizing agents methylamine (Column 6, line 7) and dimethyl urea (Column 6, line 11). Accordingly, one of ordinary skill in the art at the time the invention was made was taught that both amines and ureas were suitable for biuretizing agents.

The Appellants next argue that the reaction results in an allophanate-free product as the reaction progresses by first forming a urethane which is decomposed into an amine, CO_2 , and an olefin. In a third step, it is said, an amine forms urea with additional isocyanates and the urea forms biuret with additional isocyanate, eliminating the need for amine to be introduced initially (Appeal Brief, page 7, lines 9 - 15). However, these reaction steps and the allophanate-free character of the reaction product are not recited in the claims on appeal. Both the prior art and the claims on appeal are directed to polyisocyanates which contain biuret groups.

The Appellants additionally contend that by reciting “that stabilizer (c) is present in a catalytic amount, it is understood that this material influences the rate of reaction but does not itself enter into the reaction, as a biuretizing agent will. The present recital ‘catalytic amount’ is clearly a claim limitation herein.” (Appeal Brief, page 8, lines 1-4)(emphasis and quotations in original). We disagree. Catalytic describes the amount of stabilizer, not the function.

We decline to insert an “understood” limitation in accord with the Appellants’ interpretation with the application and prior art. Such an approach puts the burden in the wrong place. It is the Appellants’ burden to precisely define the invention, not the PTO’s. *In re Morris*, 127 F.3d 1048, 1056, 44 USPQ2d 1023, 1029 (Fed. Cir. 1997) Nothing in the claims on appeal excludes additional biuretizing agents above and beyond the water or mixture of water and tertiary alcohol of biuretizing agent b. This can include the “catalytic” and any excess amount of “stabilizer” which is itself a recognized biuretizing agent.

Claim 1 merely requires the presence of a catalytic amount of a stabilizer. This amount is exemplified at a range of 0.01 to 2.0 mol%, based upon the the isocyanate groups in (a) (Specification, page 5, lines 31-34). The Examiner has found, vis-a-vis this claim and the cited prior art, that “equivalent compounds are being used in comparable amounts, within the processes” (Examiner’s Answer, page 6, lines 1-2).

Our review of Wagner reveals that the molar ratio of diisocyanate to biuretizing agent is taught to be at least 11:1, and a preferable range extends up to about 40:1 (about 2.5 mol%)(Wagner, column 6, lines 60-63). Thus, we conclude that the

Examiner's position that equivalent compounds are being used in comparable amounts is supported by substantial evidence.

"[W]hen the PTO shows sound basis for believing that the products of the applicant and the prior art are the same, the applicant has the burden of showing that they are not." In re Spada, 911 F.2d 705, 708, 15 USPQ2d 1655, 1658 (Fed. Cir. 1990).

The Appellants have not directly refuted this, other than to say that the "prior art neither discloses nor suggests the addition of the relatively smaller amounts of the presently-recited stabilizer, such as urea or a substituted urea, materially affects both the color of the final biuret-containing polyisocyanate and the residual monomer content" (Appeal Brief, page 8, lines 6-9). As noted above, the remainder of the claim does not exclude additional amounts of other biuretizing agents other than tertiary alcohol and water; consequently this argument is not persuasive. The Examiner has, therefore, put forth a prima facie case of obviousness.

To rebut the prima facie case of obviousness, the Appellants have placed into evidence the May 17, 1999 Declaration of Bernd Bruchmann ("Declaration"). The Declaration states, in essence, that Mohring desires the formation of allophanate polyisocyanates (Declaration, page 1, lines 15-19), while the instantly claimed process results in the formation of "biurets which contain only very small amounts of allophanate" (Id., page 2, lines 15-16). The Appellants further rely upon the data contained in Table 1 and Table 2 of the Specification (Pages 9 and 10) to show the stability properties of the claimed invention versus the Mohring reference.

The Examiner has noted that "arguments pertaining to the presence or amount of allophanate groups within Mohring et al. are not considered to be relevant, because the

instant claims fail to limit or exclude allophanate groups” (Examiner’s Answer, page 6, lines 7-10). Further, the Examiner has noted that one of ordinary skill would be taught by Mohring to control the allophanate groups by using a tertiary alcohol, specifically citing example 6 of Mohring. (Examiner’s Answer, page 6, lines 12-17).

We cannot overemphasize the fact that one relying on data to establish patentability has a burden of establishing that unexpected results are actually obtained and the significance of those results to one having ordinary skill in the art. Cf. In re Klosak, 455 F.2d 1077, 1080, 173 USPQ 14, 16 (CCPA 1972) (inventor must show that the results claimed to be obtained with a claimed invention are actually obtained with the invention).

The Appellants have not refuted the Examiner’s position, nor have they shown that the “stabilizer” reduces the formation of allophanate groups. All they have shown in the Declaration is that their examples 9 and 10 have low allophanate content (Declaration, page 2, lines 1-2 and 14-16). Whether evidence shows unexpected results is a question of fact and the party asserting unexpected results has the burden of proving that the results are unexpected. In re Geisler, 116 F.3d 1465, 1469-70, 43 USPQ2d 1362, 1364-5 (Fed. Cir. 1997). The Appellants have not carried this burden regarding the allophanate content results. Simply put, we are afforded no explanation as to why low allophanate groups is desirable, unexpected, or distinguishes over the prior art.

Turning now to the stability testing results on pages 9 and 10 of the specification, we note that it appears that the sole argument put forth by the Appellants is that the claimed process yields “significantly lower color numbers as well as their monomer

content being significantly and materially lower” (Appeal Brief, page 6, lines 1-3) and that “this evidence could not have been predicted by persons skilled in the art” (Appeal brief, page 8, line 14).

The Examiner, however, has asserted that this evidence is not a comparison with the closest prior art, Mohring (Examiner’s Answer, page 6, lines 4-7).

The Appellants assert that Wagner is the closest prior art, and that it reflects Wagner and thus is a comparison with the closest prior art (Appeal Brief, page 8, lines 12-23). They base this conclusion on the belief that Mohring is concerned with the production of allophanate-containing biurets (Appeal Brief, page 8, lines 21-23).

We find that the Appellants have failed to carry their burden on two fronts. First, we agree with the Examiner that the allophanate content of Mohring is not excluded by the present claims. While the allophanate content of Mohring is indeed higher (22.1% of allophanate (III) (Mohring, column 8, lines 30-31) vs. about 1.5% allophanate in Examples 9 and 10; this distinction is irrelevant. Both Mohring and the instant claims relate to the production of biuret containing isocyanates and accordingly we agree that the Mohring reference should have been compared as the closest prior art.

Secondly, the appellants have afforded no explanation as to what the results actually mean. We assume a lower color number is better, but no explanation of what these numbers mean to one of skill in the art appears. Further, the Appellants have stated that their products have a “monomer content being significantly and materially lower” (Appeal brief, page 6, lines 1-3). While there may be lower amounts of monomer content after 21 days; we observe that the zero day monomer content for the examples according to the claimed invention is actually higher than that of the Mohring reference.

Accordingly, we find the evidence of record insufficient to rebut the prima facie case of obviousness.

Summary of Decision

The rejection of claims 1-9 under 35 U.S.C. §103 (a) is sustained.


Time Period for Response

No time period for taking any subsequent action in connection with this appeal may be extended under 37 CFR § 1.136(a).

AFFIRMED


EDWARD C. KIMLIN
Administrative Patent Judge


JEFFREY T. SMITH
Administrative Patent Judge


JAMES T. MOORE
Administrative Patent Judge

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